9-1996

Sustaining International Linkages: A Dynamic Competence View

William C. BOGNER
Georgia State University

Howard THOMAS
Singapore Management University, howardthomas@smu.edu.sg

Sustaining International Linkages: A Dynamic Competence View
Bogner, William C;Howard, Thomas
Management International; Fall 1996; Vol. 1, No 1;
pg. 1

Sustaining International Linkages: A Dynamic Competence View

WILLIAM C. BOGNER
Georgia State University

HOWARD THOMAS
University of Illinois

ABSTRACT

Strategic alliances have been growing in popularity among firms over the past 10 years. The basis for the formation of truly strategic alliances has been presented by several authors who use the theoretical foundations that are popular in strategic management, in particular the resource-based theory of the firm, organizational learning theory and industrial organization economics. Still, little has been said about why these alliances are sustained. This paper takes those same theoretical bases and constructs a basic set of propositions about the continuation of strategic alliances. It focuses on the dynamics of competence building, learning, and competitive environments in sustaining relationships. To highlight the importance of linkages, this paper looks at international alliances involving agreements subsequent to the original one to which the parties agreed. By looking at how the relationship changes with subsequent agreements, the authors draw conclusions about the consistency of firm behaviour vis-à-vis the theoretical propositions. With this theoretical basis and initial support, the foundation is laid for more extensive empirical research.

RÉSUMÉ

Les alliances stratégiques de firmes ont connu une popularité croissante ces dix dernières années. De nombreux auteurs ont étudié les bases sur lesquelles peuvent être édifiées des alliances véritablement stratégiques en faisant appel aux fondements théoriques les plus utilisés par la recherche en management stratégique, et notamment à la théorie des ressources, à celle de l'apprentissage organisationnel et à l'économie de l'organisation industrielle. Il reste qu'on n'a pas encore écrit grand chose sur les causes du maintien des alliances. Les auteurs du présent article sont partis de mêmes fondements théoriques pour élaborer un ensemble de propositions fondamentales sur la poursuite des alliances stratégiques. Ils ont cherché à montrer comment l'acquisition des compétences, l'apprentissage et les environnements concurrentiels peuvent créer une dynamique de maintien d'une alliance. Afin de mettre en valeur l'importance des liens, ils ont observé les alliances internationales dans lesquelles des accords avaient été conclus après l'entente initiale. En observant comment la relation avait changé avec les accords subséquents, ils ont pu tirer des conclusions en confrontant leurs propositions théoriques avec le comportement des firmes. Grâce à cette base théorique et à ce début de vérification, ils ont posé les fondations sur lesquelles pourront s'appuyer d'autres recherches empiriques.

RESUMEN

Las alianzas estratégicas de algunas compañías han conocido un aumento de popularidad impresionante estos diez últimos años. Numerosos autores han estudiado las bases sobre las cuales se pueden edificar alianzas verdaderamente estratégicas; para ello, han utilizado los fundamentos teóricos más corrientes en la investigación relativa a la gestión estratégica y más particularmente la teoría de los recursos, la teoría del aprendizaje de la organización y la teoría de la organización industrial. A pesar de ello, poco se ha escrito sobre las razones que justifican el mantenimiento de estas alianzas. El autore de este artículo parte de los mismos fundamentos teóricos a fin de elaborar un conjunto de proposiciones fundamentales sobre la continuación de las alianzas estratégicas. Trata de demostrar que la adquisición de competencias, el aprendizaje y un entorno de concurrencia pueden crear una dinámica que mantenga estas alianzas. A fin de subrayar la importancia de estos lazos de unión, el autor analiza aquellas alianzas internacionales que han concluido acuerdos tras la firma del pacto inicial. Tras observar cómo la relación entre las empresas había cambiado con cada acuerdo subsecuente, el autor llega a conclusiones confrontando sus proposiciones teóricas con el comportamiento de estas empresas. Gracias a sus postulados teóricos y a este inicio de verificación, el autor establece las bases sobre las que podrán apoyarse otras investigaciones empíricas.

Strategic alliances have become an important part of the competitive strategy of many large firms (Hagedoorn and Schakenraad, 1994). In the past 15 years cooperative agreements have gone from "second-best" and "reluctantly taken" alternatives (Contractor and Lorange, 1988) to preferred ways of managing technological complexity, reducing factor costs, and coping with the globalization of industries (Nohria and Garcia-Pont, 1991). These alliances cover a wide range of relationships, including marketing, licensing, R&D agreements, minority equity interests, and joint ventures. But along with this increase in the quantity and diversity of alliances comes an increase in the number of questions about the long-term relationship between the alliance partners (Ring and Van de Ven, 1992). Much has been written about why alliances are formed, but almost nothing about why they are sustained. Although all partners expect an association to be fruitful, over time different levels of power and an unequal transfer of skills may upset the fairness and the stability of an alliance (Hamel, 1991). When the cultural and political diversity of partners from different countries is added, the challenge to stability becomes greater still (Blodgett, 1992). This study explores the factors that sustain long-term, multinational relationships.

Strategic Alliances Involving Multiple Argeements

The business press has correctly identified the important role of alliances in global industries in the 1990s, such as the pharmaceutical industry ("Pharma—in transition", 1991). Until recently only a narrow stream of research, primarily on international joint ventures and licensing, had come from academics (e.g. Stopford and Wells, 1972). Since the mid-1980s, however, an increasing flow of work has examined a wider range of alliances, including R&D, marketing, and licensing agreements (Contractor and Lorange, 1988). These studies have addressed the rationale for alliance formation (e.g. Burgers, Hill and Kim, 1993; Shan, 1990; Tallman and Shenkar, 1994), issues in managing alliances (e.g. Osborn and Baughn, 1990), their use as a competitive tool (e.g. Harrigan, 1988), and subsequent performance impacts (e.g. Hagedoorn and Schakenraad, 1994; Koh and Venkatraman, 1991). Many of these studies present what could be called an emerging, strategic management perspective on alliances, one that expands on the theoretical bases of resource dependence, transaction costs, or industrial organization theories with concepts such as strategic capabilities, strategic group membership, and customer-driven markets (e.g. Burgers et al., 1993; Nohria and Garcia-Pont, 1991; Tallman and Shenkar, 1994). These new perspectives suggest that such relationships become truly "strategic" for two reasons: they involve the development and continual nurturing of each partner's internal competencies; and, through the combination of those competencies in an alliance, they produce a sustainable competitive advantage in a market for the partners to share.

This view of interfirm cooperation as producing continually increasing mutual benefits distinguishes strategic alliances from most agreements that are found in multinational settings. Historically, large multinationals have entered into international agreements to gain access to markets otherwise closed or difficult to enter, usually for raw material extraction or downstream production and selling. These agreements were often determined by the context in less-developed countries, where alliances with local firms were required for political or economic reasons, or both (Rolfe, Ricks, Pointer, and McCarthy, 1993). In contrast, the strategic agreements that began to emerge in the 1980s were increasingly between large firms of similar size, and often both firms were from industrialized countries (Contractor and Lorange, 1988). Such free-will agreements among equals reflect the increasing role of competitive strategy, rather than that of economic development policies, in driving the terms of the relationship. Being "strategic", the goal of such agreements has changed. Rather than merely focusing on success in penetrating a foreign market, successful outcomes for the partners in these agreements are associated with how well managers have used the alliance to manage environmental threats, to exploit competitive advantages, and to protect core competencies for their firms as a whole (Barr and Bogner, 1993; Quinn, 1993). In these alliances, as with the competencies and capabilities that they capture, there is a need to be as flexible and dynamic as competition demands.

Most studies of multifirm relationships have looked at each alliance as a separate unit of analysis. Still, dynamic, strategic *relationships* imply that the agendas being served are larger than those addressed in a single agreement at a given time. A strategy involving multiple alliances may be at work. These multialliance strategies may take different forms. For example, an established pharmaceutical firm may enter into R&D agreements with numerous biotechnology start-ups so as to create a buffer against this uncertain source of technological change (Shan, 1990; Pfeffer and Salancik, 1978). Although the relationship with any one biotechnology partner is not indicative of the strategy of the established firm, the agreements are in aggregate a strategy for coping with the technological environment. This type of strategic response to environmental uncertainty has been analyzed by authors who use alliance counts and identify variations in patterns between leaders and followers (e.g. Burgers et al., 1993; Lampel and Shamsie, 1994). Note, however, that in these multialliance strategies no more than one agreement between any two firms need exist.

In a different form of multialliance strategy, a pair of partners help serve each other's strategy through ongoing, multiagreement relationships. This arrangement is more truly a "strategic alliance", since both firms use multiple agreements to serve strategic ends, and the multiple agreements are with each other. These firms are pursuing more than a strategy that involves alliances; they are competing in such a way that a strategic relationship with a particular partner increasingly becomes part of their overall competitive strategy. In this paper these relationships will be referred to as international strategic relationships (ISRs). Through an analysis of associations between two firms that involve more than one agreement entered into over many years, insights can be gained about how alliances turn into strategic relationships and about the challenges that such alliances present. In a multinational context, alliances are the most challenging and the most informative. In this study ISRs will be used to test propositions about the basis of alliance stability and about firm behaviour that increases that stability.

This analysis is largely exploratory. It first sets out some general propositions that existing theories suggest could govern the success and development of relationships involving multiple alliances over time. The analysis looks for patterns among such relationships and at the consistency of those patterns with the expectations of the propositions. Because we are studying idiosyncratic relationships in detail and over time, our analysis will use methodology associated with such longitudinal studies of firms and industries (Ghazanfar, McGee and Thomas, 1987; Pettigrew, 1990; Stoppford and Baden-Fuller, 1994). Specifically, this study will examine how nine ISRs involving pharmaceutical firms in the United States, Europe, and Japan were established and built upon. Each ISR involves at least two agreements.

Some developed into quite complex relationships over time, whereas others were eventually terminated.

The following section will set out the theoretical basis for, and propositions about ISRs. Then an overview of the analysis approach is presented. A discussion of the industry context follows and descriptions of nine different multi-agreement alliance relationships are presented. The analysis of the ISRs follows with a discussion of the alliances in the light of the study's propositions. Questions for further empirical research are then presented on the basis of the observations presented and conclusions drawn from those observations.

Propositions about Sustaining ISRs

The lack of data on the outcomes of international linkages has not deterred researchers from suggestions about how firms should enter into alliances as part of an international competitive strategy (e.g. Porter, 1990, pp. 65-67). What we wish to do here is to set out the theoretical bases explaining why partners should want to modify and expand these relationships over time. By inference, we will also be identifying those circumstances in which alliances will, in fact, not be renewed or expanded. In developing the propositions about ISRs we will draw on the main theories that are influencing the emerging strategic management and international business paradigm. Specifically, in developing these propositions we draw on three major concepts in the strategy literature: 1) the role of firm-specific competencies in sustaining competitive advantages; 2) the impact of an unknowable and ever-changing competitive environment on building competencies; and 3) the role and pace of competitive learning among firms in building and leveraging competencies.

Core competencies are deemed the key to effective ISRs. Competencies represent the specific distinctive activities that a firm does better than its rivals (Barney, 1991; Bogner and Thomas, 1994; Prahalad and Hamel, 1990). A competitive advantage results when those competencies are bundled with other product traits so that they result in a competitive advantage in a market of multiple sellers (Bogner and Thomas, 1995). Alliances enable firms with complementary competencies to combine them within a single good or service so that the resulting offering gains greater advantage and commands higher margins. Thus alliances present a possibly synergistic outcome for two or more firms that lack sufficient internal skills to gain a similar competitive advantage individually, but whose combined skills can command a strong market position. Even for firms with sufficient competencies to compete without alliances, the potential for a higher level of advantage through alliances makes such linkages potentially desirable. Although the increased profits from the resulting market advantage must be shared among the partners, the net gain for each firm may be sufficient to justify capturing only a portion of the total gain.

Bargaining for membership in such an alliance requires that each partner contribute a unique and valuable competence. At the outset, it is often easy to see what distinctive competence each partner brings to the relationship. Competencies, however, do not last forever (Bogner and Thomas, 1994). Indeed, the role of a competence in building a competitive advantage gives rivals an incentive to copy or to leapfrog the current state of the art. Technological, managerial, regulatory and other advances may render a competence obsolete, often in unforeseen and unforeseeable ways (Bogner, Thomas and McGee, 1995). Further, in an alliance the partners themselves have a unique opportunity and an incentive to copy another partner's competence contribution (Hamel, 1991). As time goes by, therefore, the ability to continue to bring unique skills to the alliance, and hence to justify one's continued membership, may become strained. Partners that wish to sustain an ISR as part of their competitive strategy must also sustain an ongoing, internal competence-improvement process so as to maintain their unique contribution to the relationship. To do so each partner must continue to develop skills and resources *after* alliance formation so that, in spite of advances by rivals or usurpation by alliance partners of the initial skill contribution, new and unique skills are both available to, and needed by, the alliance in order to sustain its competitive advantage. We therefore expect that there will be a tight link between the continual development of competencies at the firm level and the continued development of an ISR between firms.

Proposition 1 Existing strategic alliances will be sustained and/or expanded when members can continually bring to the alliance new and unique skills that contribute to a competitive advantage for the alliance.

Proposition 2 Firms that can continually bring new and unique skills to an alliance do so because they continue to develop and to expand their internal distinctive (core) competencies over time.

Using the same conceptual foundations, this competence-driven view of ISRs further suggests that those firms that have their initial unique contributions copied or that fail to keep their contributions unique and ahead of their rivals will have little or no basis on which to bargain for continuation of the relationship. The flexibility of alliances gives partners the potential simply to terminate a relationship with a former competence holder and to enter into a new agreement with the new skill leader.

Proposition 3 If firms are unable to bring new competencies to the partnership, their participation in the ISR will end.

Assuming that the firm understands and implements the internal dynamics and associated processes for continually refining competencies, the focus of the firm's strength turns to the concept of learning (Fiol and Lyles, 1985), particularly the learning of firm-specific knowledge from experimenta-

tion (Huber, 1991; Nonaka, 1994; Senge, 1990). As with the propositions on competence, we expect a relationship to exist between the process that occurs within the firm and the dynamics of the ISR. Specifically, we expect that there will be an interaction between the learning needed for competencies to be nurtured and reinforced so as to sustain the ISR and the learning opportunities that membership in the ISR makes available.

On the firm level, the focus is on "experimental learning" (Huber, 1991). It is through this type of learning that competencies are constantly improved and the alliance contributions are kept valuable. A large and potentially very rich portion of this learning takes place as a result of market interactions, whether by the firm individually or through the ISR (Lant, Milliken and Batra, 1992). If, however, the ISR is providing its partners with a unique competitive advantage, then there are learning opportunities distinctly and uniquely tied to the ISR's current practice that will be available only to alliance members. Moreover, the knowledge so gained will often be "tacit" – that is, hard to transfer and thus likely to retain unique value for the initial learner for a significant period of time. Thus a circular flow results: membership in an alliance gives a firm an enriched market exposure, which in turn enables it to experiment and to learn the new unique knowledge needed for constant improvement in its competencies and, hence, to sustain its future value to (and membership in) the ISR.

Proposition 4 Firms continually bring new competencies to the ISR through the use of internal learning processes.

Proposition 5 Learning that sustains an ISR is driven, in part, by the alliance itself.

The above propositions create a dynamic relationship that should give any partner that sustains its competence the option of remaining in an alliance. Of course the other partners may not be amenable to, or capable of, going on, but the competence holder will not leave an ISR without an alternative for its competence. For, if the competence is indeed valuable, then other alliances or non-alliance competition will be available precisely because learning has sustained the unique contribution to competitive advantage that the skill can make.

This reliance on sustained competence implies that there is no relationship between a firm's ability to retain this desirability as a partner and the firm's size relative to its partners. This statement is a major contrast with industrial organization views (Porter, 1990), which suggest that small firms in partnership with larger firms will ultimately be acquired if they are valuable, or exploited and discarded, if they are not. Research has considered size in many different ways. Some researchers have suggested that large firms are not as attracted to alliances as mid-sized ones (Burgers et al., 1993). Others suggest that if size has any correlation with a pool of existing competencies, then larger size will increase opportunities for competence bundling through alliances (Hagedoorn and Schakenraad, 1994). Still others suggest that small firms are more attached to alliances because of their greater "need" (Shan, 1990). Finally, Kogut (1988) found a hint of two-way interdependence when he observed that dissimilar firm size actually increases stability.

Here it is suggested that the ability to sustain competence, and hence alliances, should be as attractive to a large firm as to a medium-sized firm. Any firm that sustains unique competencies can sustain an ISR. Indeed, it can even be suggested that the larger firm will not want to try to copy the smaller partner's skill. So long as the smaller partner can sustain the distinctiveness of its contribution, the larger partner may be better off *not* investing in that skill; instead it should focus on continually expanding its existing competencies' distinctiveness through learning, thereby maintaining its contribution and bargaining power in the ongoing relationship (Quinn, 1992).

Proposition 6 Small firms will be neither acquired nor discarded at the end of an initial alliance contract if they have sustained competencies that are meaningful in competition.

Proposition 7 The amount of a firm's strategic alliance activity is based on the level of its competencies, not its size.

Proposition 8 The ability to sustain an ISR is a reflection not of any partner's size in the competitive marketplace, but rather of the value of its competence to the ISR.

Method of Study

This research seeks to analyze how ISRs are sustained over time. In the process it will seek support for the propositions just presented. To achieve these goals, the analysis focuses on relationships that include two firms from different countries and that span a significant period. Identifying and analyzing such relationships presents some challenges. The first methodological challenge is presented by the reality that alliances are qualitative actions, not quantitative ones, such as advertising expenditures. Apart from the birth and termination of the alliance, hard data related to the impact of an alliance on the partners are difficult to deduce, particularly when firms from different nations are involved. Further, the terms and benefits of alliances are often idiosyncratic, since they are based on each partner's particular access to skills or markets and, therefore, are difficult to compare. Hence, standardized, quantifiable variables were not likely to be found across the ISRs for statistical analysis.

The second methodological challenge is that data on alliances are not collected uniformly by any readily accessible data base. (It is this limitation that has led to the "self-help" actions of research organizations interested in broad studies of alliances, such as the data collected by INSEAD, the leading French business school, since the mid-1970s

(Hergert and Morris, 1988).) Given that we are looking specifically for relationships that have endured for several years, this challenge was even greater because strategic alliances have recently emerged as a major component of competitive strategy. To offset this limitation the global pharmaceutical industry was selected because international linkages between leading firms have occurred regularly since the 1950s and the likelihood of finding several ISRs for comparison was high. Still, the same limitations regarding the collection of data on linkages exist here as with other studies (e.g. Burgers et al., 1993; Nohria and Garcia-Pont, 1991). Most of the alliance data, therefore, had to be gleaned from annual reports and English-language industry periodicals from North America and Western Europe. The strengths and weaknesses of this method of data collection are discussed in detail in Hagedoorn and Schakenraad (1994). From extensive lists of linkages involving U.S. and non-U.S. firms, the study selected those relationships that met the criteria for multiple agreements and that spanned several years.

The method of analysis selected for this study is the comparative case study method (Eisenhardt, 1989; Yin, 1984). This method allows for a systematic analysis of those firm behaviours that are not amenable to formal quantitative analysis. In particular, the method emphasizes an analysis of the rich context in which each agreement occurred during the ISR. Observations are selected precisely because they amplify the points of focus suggested by the propositions (Eisenhardt, 1989, 1991; Pettigrew, 1990). The analysis is done within seven cases and across cases on the basis of the initial propositions (e.g. Mintzberg, Raisingnani and Théorêt, 1976). The results of the analyses are then used to enrich or to modify the understanding of the topic (e.g. Eisenhardt and Bourgeois, 1988; Gersick, 1988).

We will first focus on the industry context so as to develop the competitive landscape within which the cases will be discussed. Then the individual cases will be presented to the extent that space permits.

International Strategic Relationships in the Global Pharmaceutical Industry

The global pharmaceutical industry emerged in the 1940s as an industry separate from the chemical industry. The features that distinguished this newly emerging industry arose from a nearly simultaneous set of events: 1) the development of mass production of penicillin and synthetic antibiotics; 2) the creation of prescription-only status for drugs in several countries; and 3) the emergence of firms, primarily in the U.S. and Switzerland, whose primary product lines were prescription drugs, rather than fine chemicals (Bogner and Thomas, 1996). Although the demand for these products was generally global, at the time few firms had a global reach. Indeed, many of the larger firms that had been engaged in drug research before World War II were German firms that needed the most postwar rebuilding. Conversely, many of the U.S. firms that emerged with key antibiotic competencies after the War had little if any experience in many of the industry's downstream functions, such as marketing, even in the U.S. (Bogner and Thomas, 1996). Given these supply-side constraints and strong global demand, the foundation was set for significant, long-term, multinational relationships among firms.

Today competitive conditions place different demands on firms, all of which are equally compelling as explanations of strategic alliances. Even in the wake of increasing regulatory action, the advent of biotechnology and new downstream distribution systems, firms must still address key strategic competitive issues. To compete effectively a firm must possesses at least one patent-protected drug in a particular therapeutic class, and in each country it must be able to establish that drug as the drug of choice in the eyes of physicians and the other gatekeepers who control the public's access to drugs (Bogner and Thomas, 1996). Many firms have also developed an appreciation for a third set of skills, the ability to manage the regulatory process in each national market. Together with other capabilities, these skills enable firms consistently to bring new drugs to market, to produce sufficient sales from those drugs, and to fund the research and development of the next generation of products. And, in the end, the drugs that produce the most substantial cash flows often represent a small percentage of a firm's total product line.

Sales of particular drugs are confined to a particular therapeutic, or treatment, class. Substitution does not occur between, say, antibiotics and cardiovascular drugs. Thus the market for any product is much narrower and more concentrated than the industry market as a whole (Cool, 1985). Further, these high-cash-flow products are limited in their productive life by the terms of their patents, with the more successful drugs drawing the most aggressive generic competition upon patent expiration. More likely, even before expiration, other research firms may be able to formulate alternative products and to convince physicians that these new products are the new drug of choice, thereby greatly cutting into the established product's sales in spite of patent protection. The result of this Schumpeterian process is the endless pursuit of new and improved patent-protected treatments. These drugs come out of the laboratory at a cost of more than $200 million each. And very few achieve blockbuster status (annual sales of more than $500 million) for even a short period of time (Bogner and Thomas, 1996). In this environment ISRs help spread the risks and costs of product development.

The regulatory, technological, and competitive environments of the 1990s encourage firms to spread risk in a number of ways. First, firms wish to have a product position in multiple therapeutic classes. This product diversification reduces the impact on cash flow when a competitor introduces a new drug of choice within the class or when patents expire. Closely related firms want to participate in a wide-ranging R&D effort. Different therapeutic classes exhibit different patterns of technological breakthroughs. In the

1950s antibiotics went through tremendous evolution, in the 1960s and again in the 1980s numerous breakthrough psychotropic drugs entered the market, and in the 1980s the cardiovascular market saw tremendous growth with new therapies and treatments (Sneader, 1985). Firms with research competencies in just one of these areas could have large swings in sales and profits as the R&D in that class followed the peaks and troughs of discovery. Through ISRs research and development can be spread across a wider number of products and therapeutic classes and thus help stabilize the flow of new products.

Finally, the nature of the drug industry requires firms to sell drugs that are globally demanded under widely varying market conditions. Differences can be found in the national approval processes, the national attitude toward treatment and promotion, and the selling process, all of which can slow or limit global penetration levels. Yet firms have an incentive to reach a global market as quickly as possible so as to capture profits before new drugs of choice or patent expirations push down revenues. ISRs can provide long-term relationships with local firms that possess competencies in both dealing with regulators and in marketing to gatekeepers such as physicians or hospital pharmacies.

Cases for Analysis

For each of the cases that follows we set out an ISR that meets the criteria for study. Each involves more than one bargained-for agreement. With one exception, the relationships range from about 10 years to more than 35 years. Four firms are involved in the cases twice. The ISRs have a wide range of eventual outcomes, including acquisition, dissolution and ongoing success. Each of the relationships is different; some are straightforward, others convoluted. Some change with the fortunes of the parties, others with the nature of the competitive environment. This mix of quite different ISRs is particularly gratifying given the research intent of understanding the applicability of the research propositions across all types of ISRs. A summary of each ISR is presented in Table 1. Here each will be developed individually as space permits. An integrated analysis follows in the next section.

TABLE 1

Multiple Agreements

FIRMS	AGREEMENTS	SURROUNDING CIRCUMSTANCES
Upjohn (U.S.) and Boots Pure Drug Ltd. (U.K.)	*1959*: Joint venture between Boots and Upjohn of England for marketing of Upjohn chemicals in the U.K.	Upjohn of England begins construction of facilities in Crawley, U.K., for research and production in 1961.
	1974: Upjohn begins selling Boots's discovery, ibuprofen (Motrin) in the U.S.	Motrin is 26% of Upjohn's sales in 1981 when exclusivity ends, and Boots enters market with Rufin.
	1986: Upjohn and Boots revise marketing agreement for flurbiprofen (Ansaid), son of ibuprofen, giving Upjohn exclusive U.S. rights.	Upjohn and Boots both launch OTC version of ibuprofen through licensing agreements with other firms.
Upjohn (U.S.) and Hoechst-Roussel (Germany-France)	*1950s*: Upjohn licenses tolbutamide (Orinase) after conducting clinical trials in the U.S. for Hoechst.	Orinase accounts for about 15% of sales late in the 1960s, but sales drop in the wake of controversy over oral antidiabetic treatments.
	1970s: Upjohn licenses glyburide (Micronase), son of tolbutamide, for the U.S.	Controversy delays regulatory approval until 1983.
	1990: Joint marketing agreement for Altace.	
	1991 Upjohn licenses glimepiride, third-generation antidiabetic for the U.S.	

FIRMS	AGREEMENTS	SURROUNDING CIRCUMSTANCES
Abbott Labs (U.S.) and Dainippon (Japan)	*1961* Formation of Nippon Abbott to manufacture radio-chemicals. *1979* Abbott takes 60% control over the joint venture. *1980s* Product licensing between the parents, formation of another joint venture in Taiwan (70% Abbott). *1983* Reorganization of all Japanese operations into Dainabot.	Legal changes in 1975 allow foreign ownership of more than 50%.
Abbott Labs (U.S.) and Takeda (Japan)	*1977* Joint venture formed to create TAP. *1980* TAP agreement amended to include Latin America.	Drugs from Takeda research are put into TAP.
American Home Products (U.S.) and Sanofi (France)	*1981* AHP and Sanofi enter into joint venture. *1980s* Marketing agreements entered into between parents. *1987* AHP and Sanofi enter into equity agreement, and all other agreements are terminated.	AHP and Sanofi compete for bankrupt A.H. Robbins in 1989, and AHP wins.
Sterling Drug (Kodak) (U.S.) and Sanofi (France)	*1991* Sanofi and Sterling enter into three joint ventures. *1994* Sanofi bids to acquire Sterling's pharmaceutical business.	Combined, the firms are a top-20 drug firm worldwide. Sterling's parent, Kodak, decides to focus on core business.
Merck (U.S.) and Banyu (Japan)	*1954* Formation of Nippon Merck-Banyu joint venture. *1983* Merck acquires 50.5% interest in Banyu.	Japan develops into the world's largest antibiotic market. Largest acquisition, to date, under new law allowing more than 50% foreign ownership.
Pfizer (U.S.) and Biogal (Hungary)	*1980* Pfizer and Biogal agree to joint marketing deal. *1991* Pfizer and Biogal form joint venture to market Pfizer products in Hungary, with 51% owned by Pfizer.	Opening of market to Western investment without loss of control of Hungarian parent firm.
Ciba-Geigy (Switzerland) and Biogal (Hungary)	*1970s* Ciba-Geigy subsidiary, Zyma, and Biogal enter into numerous production and licensing agreements. *1980* New joint venture to build plant and to distribute its output. *1991* Ciba-Geigy and Biogal form another joint venture for manufacturing and research. Ciba-Geigy controls 51% of the venture.	Joint venture laws liberalized. Hungarian government retains key 1%.

Upjohn and Boots Pure Drug. Boots Pure Drug has traditionally been one of the most vertically integrated of all pharmaceutical firms, from research to retailing. Known more for its chemist's shops, it has also conducted research activity and chemical production for decades. In 1958 a joint venture, Lenbrook Chemicals Ltd., was formed between Boots and Upjohn's English subsidiary in Crawley to market Upjohn chemicals and bulk pharmaceuticals in the United Kingdom. It is assumed that Upjohn bulk drugs found their way into many of the prescriptions that Boots was filling in its chemist's shops. This venture was the first linkage between the two firms.

In 1969 Boots launched its anti-inflammatory drug, ibuprofen, in the U.K. as Brufen. (In this paper the universal chemical names for drugs are used; where brand names for particular markets are also presented, they are capitalized.) (See Sneader (1985: 93-94) for a brief history of the ibuprofen discovery process.) Boots entered into a licensing agreement with Upjohn, which gained regulatory approval for the drug in the U.S. and began selling it under the Upjohn label in 1974 as Motrin. In 1975 Motrin had the largest first-full-year sales of any ethical drug in U.S. history. Still, the licence granted to Upjohn was non-exclusive, and in 1979 Boots acquired a small pharmaceutical house in the U.S., renaming it Boots Pharmaceuticals with the intention of launching its own version of ibuprofen. Upjohn was unable to block FDA approval of Boots's ibuprofen entry in 1980.

From Boots's perspective the drug was an avenue for entering the U.S. market under its own name, just as Hoechst (discussed next) and others were attempting to do at that time (Bogner and Thomas, 1996). Still, Boots had far fewer potential drugs of choice in its pipeline, a fact that amplified the importance of ibuprofen and related drugs to its U.S. success. So, too, the licence was critical to Upjohn. In 1981 ibuprofen accounted for 19% of Upjohn's pharmaceutical sales. Boots estimated that in 1981 Upjohn earned $38.2 million on those sales while the royalties and other fees paid to Boots were only $13.2 million (Hemp, 1986). By 1983 Boots's ibuprofen sales in the U.S. were only $35 million, reflecting the firm's inability to build an effective U.S. presence, while Upjohn's sales fell below their $215 million peak in 1982 to just below $200 million. Still, the product accounted for 40% of Upjohn's profits in 1983 (Williams, 1984). In spite of their difficulties, in 1986, one year after ibuprofen's U.S. patent expired, Boots and Upjohn agreed to revise the licensing agreement as it covered the related product, flurbiprofen (Ansaid in the U.S., Froben in the U.K.). The revised agreement gave Upjohn the exclusive licence for U.S. sales of the new product. Although Boots's R&D generated one other promising drug, flosequinan (Manoflax), which was to be sold in the U.S. by Warner-Lambert, not Upjohn, side effects determined by clinical testing caused the product's withdrawal. Boots subsequently sold its prescription drug research arm to BASF.

Upjohn and Hoechst-Roussel. This ISR dates back to the 1950s and covers three generations of drugs for the oral treatment of diabetes as well as other product-licensing agreements. The original agreement concerned the drug tolbutamide, which Hoechst developed after World War II. (See Sneader (1985: 217-219) for a brief history of the discovery process.) Upjohn helped conduct the initial tests on tolbutamide for Hoechst and launched it in the U.S. in 1957 as Orinase. Through the 1960s the product and an analog, tolazamide, which was developed to deal with some of the cases where tolbutamide was not effective, were key products for Upjohn. Late in the 1960s these antidiabetes drugs accounted for about 16% of Upjohn's sales. Still, at the decade's end questions were being raised about the side effects of these drugs, and sales had fallen to 11% of the corporate total by 1971.

Safety questions delayed the marketing of Hoechst's second-generation diabetes drug, glyburide. Upjohn had acquired the rights to this product, too, and hoped it would offset tolbutamide's slide. It would be 1984, however, before the product could be introduced as Micronase. The delayed approval meant that the product entered the market at the same time as another second-generation drug, glipizide, developed by Carlo Erba of Italy and licensed to Pfizer. Still, Micronase accounted for 7% of Upjohn's sales in 1992.

In the 1980s, Hoechst launched a "major expansion drive" in the U.S. ("A Chemical Giant", 1981) which included a decision to increase pharmaceuticals as a percentage of the firm's global portfolio. Hoechst was building a direct sales force in the U.S. which would reach about 650 by the end of the decade (Teitelman, 1989). More new products could now be sold under the Hoechst name or that of a subsidiary, rather than through the U.S. licence. Still, in 1990, the two firms agreed to develop and market the third-generation antidiabetes product, glimepiride, and to market jointly Hoechst's new hypertension drug, Altace.

Abbott Labs and Dainippon Pharmaceutical. Dainippon is a subsidiary of Dai Nippon Ink and Chemical and has always had a strong Japanese focus with limited foreign efforts under its own name. In 1962 Abbott and Dainippon established a joint venture, Nippon Abbott. The original intent was to manufacture radio-pharmaceuticals. After the legal changes in 1975 that allowed increased foreign ownership of Japanese businesses, the agreement was renegotiated, and by 1979 Abbott had raised its stake in Nippon Abbott to 60%. Then in 1983 Abbott's Japanese relationships, which included agreements with other firms (including the TAP joint venture with Takeda discussed next), were realigned. Several units, including Nippon Abbott, were merged into an integrated health care company, Dainabot. It was still a joint venture with Dainippon, but Abbott retained a "majority interest and management responsibility" in the new firm (1983 Annual Report).

The Dainabot joint venture has clearly undertaken a broader range of drug marketing responsibility for Abbott

in Japan. Interestingly, some of these licences have involved products from other local Japanese firms. For example, late in the 1980s Abbott acquired from Taisho the rights to sell clarithromycin, a synthetic antibiotic. Although Abbot sells the product in most of the world, Dainabot markets it in Japan. Similarly, Abbott has been jointly developing, with Toyama, an antibacterial called tosufloxacin, but Dainabot will do the co-marketing with Toyama in Japan.

The Abbott-Dainippon relationship has also been the platform for agreements outside Japan. For example, in 1981 Dainippon licensed Urixin to Abbott for sale in the Pacific and the Far East. The two companies have also established the Taiwan Dainippon Pharmaceutical Co., which is owned 70% by Abbott and 30% by Dainippon.

Abbott Labs and Takeda. Takeda Chemical Industries is the largest pharmaceutical firm in Japan. It formed TAP, a joint venture with Abbott in 1977. The initial purpose was to provide registration and marketing for Takeda drugs in the U.S. and Canada. The relationship quickly began developing beyond its original scope, and by 1980 a second agreement had been announced. Over the years this agreement expanded the territory for TAP products to include Latin America and Europe. The following year TAP announced that three of its products were being prepared for launch in South America. By 1982 TAP was developing four drugs that had originated from Takeda, and new drug applications were filed for these the following year. When the first product to emerge from TAP research was launched in 1986, it was marketed by each parent independently, not by TAP. New products continue to be developed by the parents, and flexible negotiation seems to determine whether they will go into TAP or be licensed to the other parent directly. By 1988 TAP had a manufacturing plant and a 70-person sales force in Japan.

American Home Products and Sanofi; Sterling Drugs and Sanofi. American Home Products (AHP) is a diversified firm with a large stake in pharmaceuticals. Sanofi is a pharmaceutical subsidiary of the French petroleum company Elf Aquitaine. In 1981 the two firms established a joint venture. Sanofi was looking for product links and increased U.S. market access and AHP was interested in gaining access to the Pasteur Institute and its genetic engineering research. In addition, the two firms had entered into single-product marketing agreements for individual products. In 1987 the relationship took some interesting turns. First a new equity agreement was concluded to replace the previous joint venture and all marketing agreements. Then, late in the year, both AHP and Sanofi made competing bids for the bankrupt A.H. Robins company, with AHP winning. No further dealings between AHP and Sanofi have been announced. In mid-1994 AHP tried to acquire American Cyanamid (Lederle Labs).

After the competition for Robins, Sanofi sought to establish an ISR with the Sterling Drug unit of Kodak through a series of three alliances. The two firms rank in the top 30 in terms of global sales; the set of alliances would put them in the top 20 worldwide and in the top eight in Europe. Two of these agreements covered pharmaceuticals, with both firms contributing their products and each managing the joint venture in their region of the world. The third joint venture covered over-the-counter products in Europe and was managed by Sterling. In 1994, when Kodak announced that it would focus on its core photography and imaging business, Sanofi sought to acquire outright the pharmaceutical operations of Sterling worldwide, thus ending the two alliance agreements, in return for its interest in the over-the-counter joint venture, which was then sold to SmithKline Beacham.

Merck and Banyu. Merck and Banyu began working together in 1954 when they formed a joint venture called Nippon Merck-Banyu for the manufacture and sale of Merck products in Japan. Banyu's product line focused primarily on antibiotics, and it had arrangements with other firms as well. Under the initial agreement salesmen from the joint venture would promote Merck's products and Banyu salesmen would take the orders. In 1983 Merck bought 50.5% of the equity in Banyu in what was the largest acquisition in Japan to that date by a foreign firm. A 1985 analysis of the transaction (Smith, 1985) found Banyu to be weaker than expected, ranking it 14th in a fragmented Japanese market. Banyu now promotes Merck and Banyu products exclusively.

Pfizer and Biogal; Ciba-Geigy and Biogal. Hungary has the most developed pharmaceutical industry in Eastern Europe and has been able to export about 70% of its output. Biogal, a Hungarian firm, has been engaging in ISRs since joint venture laws were liberalized in about 1980. Pfizer's first deal with Biogal was a joint marketing agreement in the 1980s. Then in 1991 the two firms formed a joint venture to expand their relationship. Pfizer owns 51% of the new joint venture, which markets Pfizer-originated products in Hungary. The Hungarian government has announced its intention of retaining local control of the parent company.

A similar pattern of agreements between Biogal and Ciba-Geigy also took place. In the second half of the 1970s a Ciba subsidiary, Zyma, entered into numerous pharmaceutical production and marketing licences with Biogal. In 1980 the two firms formed a joint venture to build a new plant in Hungary. Under the agreement Zyma owned 49%, Biogal 50% and the Hungarian government 1%. The two principals each agreed to buy and to distribute 50% of the output. Then in 1991 Ciba-Geigy and Biogal formed a second company, Ciba-Geigy-Biogal Pharma Kft, a 51-49 joint venture. This venture will use the existing facilities of both parent firms for a wide range of pharmaceutical research and manufacturing.

An Aggregate Analysis of Sustained Alliances

ISRs and Competencies. The nine ISRs just summarized all contain strong support for the role of sustainable competence in multiagreement relationships. The competencies that the partners provided were seldom the same across the relationships; each relationship contained a large number of situation-specific variables that were addressed. Still, the presence of competencies sustained relationships that were modified or expanded, whereas their absence led to the end of the relationship in some instances, in spite of past successes.

Most important for our study was the ability of firms to keep the competencies valuable during the initial term of the agreement. The first proposition suggested that so long as a partner's contributions are needed to sustain a competitive advantage in a market, the parties will seek to continue the relationship. The two relationships involving Upjohn are a case in point. The relationships that Upjohn had with Boots and Hoechst show how Upjohn's expanding marketing competencies helped sustain the alliances. In both cases they retained unique capabilities leading to competitive advantages that were evident from Upjohn's established relationships and selling experiences. This contribution can best be inferred from Upjohn's success in sustaining the second-generation products. In the ISR with Hoechst, regulatory delays meant that the drug entered the market at the same time as therapeutically compatible products from other firms. Clearly it was effective marketing, not any therapeutic significance, that made the difference. Similarly, by the time the second-generation anti-inflammatory products were coming out of Boots's laboratories, several other firms, most notably Syntex and Pfizer, had launched comparable nonsteroidal anti-inflammatory products. But Upjohn's established relationships with physicians, built up during the first agreement, produced a distinctive skill that was valuable enough for Boots to continue the relationship in spite of the firms' conflicts.

Competitive advantages were sustained in both cases because Upjohn was able to expand the level of its underlying competencies, as suggested by proposition two. And it was not just superior marketing skills that Upjohn had relative to competitors selling comparable drugs. Note that both Hoechst and Boots were developing their own selling operations in the U.S. at that time. But Upjohn clearly kept its skill level ahead of that of its partners, which were trying to develop internally what Upjohn was contributing very successfully.

This tie between building and leveraging competencies within firms and sustained ISRs between firms was also seen elsewhere. In both of Abbott's relationships with its Japanese partners the competencies located in the partners' research laboratories continually provided new products to the ISRs. In these cases we see firms expanding their agreements owing to the partner's ability to respond positively to changes in technology or the political environment. In both cases the firms were able to enter new markets not covered by the original agreement: Asia-Pacific in the case of Abbott-Dainippon, and Eastern Europe and Latin America in the case of Abbott-Takeda.

In contrast, where the changing environment does not allow firms to bring new competencies to the market for a competitive advantage, the relationship will wither, as proposition three suggested. The eventual withdrawal of Boots from pharmaceutical research is clearly consistent, but the Sanofi-American Home Products relationship is an even better illustration of this point. The ongoing relationship with AHP failed to produce the market access and research that Sanofi wanted. Pushed by the battle over AH Robins, the firm established a new set of relationships with Sterling to do essentially what it had sought initially with AHP. The difference in these cases was the ongoing strength of the competencies that Sanofi's partners could contribute in return.

ISRs and Learning. The underlying role of firm-level learning suggested by propositions four and five is supported by the ISRs discussed here. As previously discussed, Upjohn was able to capitalize on its skill advantage in serving physicians in the wake of its partners' increased marketing efforts. Most important, the skills that Upjohn developed in serving these physicians were built during the initial phase of the relationship. Had it not been for the initial alliance, Upjohn would not have developed the ability to present distinctive skills to its partners as an incentive for sustaining the relationship through the second generation of drugs.

In a different way the Abbott ISRs also show how learning builds and strengthens the alliance relationship. In the Abbott-Dainippon relationship the alliance itself became the vehicle for new experiences. The founding of new joint ventures in third countries and the subsequent development of a pool of knowledge and skill *inside* the ISR's joint venture were learning outcomes of the initial relationship which, in turn, created opportunities for further experimental learning. These new pools of knowledge and skills, including the potential for still further learning, were held in neither firm but rather in the joint ventures that their initial relationship led them to. Future extraction of knowledge from the ISR becomes more difficult because of the new ties that learning created. Interestingly, here the parents' initial strategy for the joint venture now drives the learning that occurs in the offspring.

Firms may fear that such close relationships could compromise their independence or jeopardize their unique firm-level knowledge. The TAP joint venture between Takeda and Abbott, however, best illustrates how ISRs that give rise to separate learning organizations such as joint ventures can take advantage of this form of collaboration yet maintain the firms' distance. In that relationship the two separate research units contributed promising products to the joint venture for development and marketing. Unique skills were developed through learning in the TAP joint venture, but the core research labs remained independent.

Generally, the development of the Abbott ISRs suggests that future research may find that the learning that sustains a relationship can occur in the partner (e.g. Abbott) or in the offspring of the ISR (e.g. Dainabot). The key is that the learning outcomes that sustain the value of the relationship are also outcomes of the relationship. By contrast, the Sanofi-AHP relationship shows how a lack of ISR-based learning can kill an alliance. It was clear that both firms continued to learn during their relationship, but the learning did not emerge from nor did it sustain the alliance. Rather, it appears that firm-level R&D that developed independent of the alliance was the driver and led to new relationships with others.

ISRs and Firm Size. The ISRs that were terminated, as well as those that were sustained, show support for propositions six through eight. If we look at the entire firm and pharmaceutical business size in Table 2, it is clear from all the relationships that the competence contribution levels better explain the continuation or end of the ISR than does similar size of the partners. As predicted by Porter (1990) and others, weaker partners have the potential to be overtaken, as was seen in the Merck-Banyu situation. And because this study set out to look at relationships that endured, selection bias may have cut out several similar takeovers. But in most of the cases studied here, such takeovers did not occur. Other outcomes are possible. In some cases firms continued the relationship by providing ever more valuable flows of similar skills, such as those that Upjohn provided to Hoechst. In other cases new skills were added to the improving old skills in subsequent agreements. The extent of the alliance grew as the resources and competencies of the firms grew. Thus it was the changes in Eastern Europe combined with Biogal's skills in taking advantage of those changes, rather than comparable size, that increased its bargaining power with its partners and led to new expanded relationships.

TABLE 2

Pharmaceutical Firms Studied in the Global Top 40 (Billions $)[a]

FIRM	1988 CORP. SALES	1988 Rx SALES	Rx RANK
Merck (U.S.)	5.94	4.24	1
Ciba-Geigy (Switzerland)	12.73	3.02	3
Hoechst (Germany)	23.53	2.70	4
American Home Pr. (U.S.)	5.50	2.42	5
Pfizer (U.S.)	5.39	2.26	9
Upjohn (U.S.)	2.75	1.65	16
Takeda Chemical (Japan)	5.06	1.48	19
Abbott Labs (U.S.)	4.94	1.45	20
Sanofi (France)	2.40	1.05	29

SALES OF OTHER FIRMS IN STUDY

Banyu (Japan)[b]	Rx sales $280 million in year before acquisition, 1982.
Dainippon (Japan)	Rx sales NA
Boots (U.K.)[c]	$3.15 billion worldwide corporate sales in fiscal year ending March 1986, just before final Boots-Upjohn agreement. Rx sales NA
Biogal (Hungary)	Rx sales NA

NOTES: a Teitelman, 1989
b Smith, 1985
c Hemp, 1986

These ISRs illustrate the ability of smaller firms to provide *continuing* flows of technology or market access. The results indicate that future research can expect to find that size has only partial explanatory power for all alliances and, in particular, does not explain ongoing relationships that build and develop over time. It is clear that small firms never seem to gain access to the larger firm's core competencies, but it is also clear that smaller firms are not being cast aside. That exception to the basic industrial organization logic points to, and is consistent with, a competence-based explanation of ISRs.

Studying Alliances from a Competence Perspective

Kogut (1988) discussed whether technology or market access was more important to relationship stability. His results suggested that both factors contribute to stability. The ISRs studied here strongly support that view. The two-way flows of distinctive contributions often included technology going one way and marketing or regulation coping skills going the other. Boots's reassessment of its situation in the U.S. paved the way for an increased rationalization of its selling agreement with Upjohn on ibuprofen spinoffs. Abbott and Dainippon were able to modify their relationship not only to reflect changing Japanese law, but also to take advantage of market opportunities elsewhere in Asia. Biogal's history as a major exporter to Eastern Europe and the Middle East gives it a skill that can be contributed over the years to its joint venture partners.

In the end, in a very real way, it is precisely because of the two-way flows of partner competencies, whether technological or market, that relationships become strategic. In each of these cases the history of the firms involved shows that an important contribution of a strategic nature was at least sought, and often obtained. As conditions changed, firms renegotiated the relationships to maintain those flows because of their contribution. For example, as Upjohn sought to develop its own portfolio of strong drugs internally in the 1980s, it is impossible to imagine it obtaining such results without Orinase, Micronase and, especially, Motrin. The cash flow that these drugs provided was critical in carrying Upjohn through the many years of R&D needed to launch its products. Because of this strategic role, Upjohn's dependence on Boots was much greater than indicated by each firm's U.S. drug sales.

Upjohn's partners also benefitted. Hoechst truly won a race in the 1950s to establish its oral antidiabetic drug as the drug of choice against its rival, C.H. Boehringer. Boots was able at least to take a shot at the U.S. market, even if the results were disappointing. Similarly, one can see how Biogal has the ability to emerge as one of the giants of Eastern Europe's pharmaceutical industry owing to the leverage it has been given by its alliances with Ciba and Pfizer.

It is compelling to argue that the more a relationship makes an ongoing contribution to a firm's strategy, the more stable that relationship is likely to be. The very concept of a competitive strategy implies a long-term perspective. Therefore, relationships that are seen as filling important strategic needs should be long-term. If they do, in fact, fulfill those needs, then they have made themselves indispensable for continuing the successful pattern of competition.

Further Questions and Research

One of the goals of this research was to review relationships that had existed over many years in the pharmaceutical industry so as to gain insight into the large number of newer strategic relationships now developing in many industries. When many of these pharmaceutical arrangements were begun, the concept of a strategic alliance was unheard of. Many firms simply grew into them and learned by doing. One question for long-term study is, therefore, Are different patterns of relationships observed among firms that start out with strategic alliance on their lips? Do such relationships, starting with high ambitions from day one, have any more of chance of developing into an ISR than those relationships that emerge over time?

This research is inconclusive on these points. For example, it would be hard to argue that Abbott and Dai Nippon Ink foresaw anything like their current relationship when they formed their initial joint venture to produce radiopharmaceuticals in 1961. Conversely, the broader expectations between AHP and Sanofi produced the least satisfactory of the ISRs studied, and the partners went on to other equally strategic moves. The "planned" versus "emergent" contrast is not new to strategy. Mintzberg (1979; 1990), Quinn (1980) and others have long argued that the vary nature of a swiftly changing technological and competitive environment, such as pharmaceuticals, requires more flexible, incremental, emergent strategies. Rigid planning is not feasible. Do today's strategic alliances provide that flexibility to deal with unforeseen environmental change? Or are they merely alternative forms of "intended", planned strategy and, therefore, subject to the same fate as all fixed plans in turbulent environments?

This study deliberately focuses on the pharmaceutical industry so as to control for industry variation. The technological and competitive environment just discussed is often seen as a factor that varies from industry to industry (Porter, 1980) and such variation needed to be eliminated here. This gives rise to the question: what role does industry play in the success of ISRs? If such relationships do indeed enable firms to compete more effectively in turbulent environments, as many pharmaceutical firms seem to believe, then there should be a positive relationship between the turbulence of the environment and the number of ISRs in the industry. Here we suggest two points for further study: more turbulence leads to more ISRs for the firm, and the firm's ability to cope with that turbulence will increase ISR stability ▪

References

BARNEY, J. (1991). Firm Resources and Sustained Competitive Advantage. *Journal of Management,* 17(1), 99-120.

BARR, P.; BOGNER, W. (1993). *Understanding Alliances: An Interpretive View of Alliance Choice.* Paper presented at the Academy of International Business Annual Meeting, Maui, Hawaii, October.

BLODGETT, L. (1992). Factors in the Instability of International Joint Ventures: An Event History Analysis. *Strategic Management Journal*, 13, 475-481.

BOGNER, W.; THOMAS, H. (1994). Core Competence and Competitive Advantage: A Model and Illustrative Evidence from the Pharmaceutical Industry. In G. Hamel and A. Heene (eds.), *Competence-Based Competition.* London: John Wiley & Sons.

BOGNER, W.; THOMAS, H. (1995). From Skills to Competencies: The "Play-Out" of Resource Bundles Across Firms. In A. Heene, R. Sanchez and H. Thomas (eds.), *Theory and Practice in Competence-Based Competition: From Industry Studies to a New Theory of Competitive Dynamics.* London: Pergamon Press.

BOGNER, W.; THOMAS, H. (1996). *Drugs to Market: Creating Value and Advantage in the Pharmaceutical Industry.* Oxford: Pergamon.

BOGNER, W.; THOMAS, H.; MCGEE, J. (1995). Technological Forces as the Source of Industry Change: An Industry Study, In H. Thomas, D. O'Neal and J. Kelly (eds.), *Strategic Renaissance and Business Transformations.* Chichester: John Wiley and Sons, Ltd.

BURGERS, W.; HILL, C.; KIM, W. (1993). A Theory of Global Strategic Alliances: The Case of the Global Auto Industry. *Strategic Management Journal*, 14, 419-432.

BUSINESS WEEK (1981). A Chemical Giant Leans More Heavily on Drugs, July 6, 39-40.

CONTRACTOR, F.; LORANGE, P. (1988). *Cooperative Strategies in International Business*, Lexington Books, Lexington, MA.

COOL, K. (1985). *Strategic Group Formation and Strategic Group Shift: A Longitudinal Analysis of the U.S. Pharmaceutical Industry, 1963-1982.* Unpublished Ph.D. dissertation, Purdue University, West Lafayette, Ind.

DOZ, Y. (1988). Technology Partnerships Between Larger and Smaller Firms: Some Critical Issues. In F. Contractor and P. Lorange (eds.), *Cooperative Strategies in International Business.* Lexington, Mass: Lexington Books.

EISENHARDT, K. (1989). Building Theories from Case Study Research. *Academy of Management Review*, 14, 532-550.

EISENHARDT, K. (1991). Better Stories, not Better Constructs: The Case for Rigor and Comparative Logic, *Academy of Management Review*, 16, 620-627.

EISENHARDT, K.; BOURGEOIS, L. (1988). Politics of Strategic Decision Making in High Velocity Environments: Toward a Mid-Range Theory. *Academy of Management Journal*, 31, 737-770.

FIOL, M.; LYLES, M. (1985). Organizational Learning. *Academy of Management Review*, 10, 803-813.

GERSICK, C. (1988). Time and Transition in Work Teams: Toward a New Model of Group Development. *Academy of Management Journal*, 31, 9-41.

GHAZANFAR, A., MCGEE, J.; THOMAS, H. (1987). The Impact of Technological Change of Industry Structure and Corporate Strategy: The Case of the Reprographics Industry in the United Kingdom. In A. Pettigrew (ed.), *The Management of Strategic Change*: 166-193. Oxford: Basil Blackwell.

HAGEDOORN, J.; SCHAKENRAAD, J. (1994). The Effect of Strategic Technology Alliances on Company Performance. *Strategic Management Journal*, 15, 291-309.

HAMEL, G. (1991). Competition for Competence and Inter-Partner Learning Within International Strategic Alliances. *Strategic Management Journal (Summer),* 83-103.

HARRIGAN, K. (1988). Joint Ventures and Competitive Strategy. *Strategic Management Journal*, 9, 141-158.

HEMP, P. (1986). Boots Co. Agrees to Acquire Drug Unit of Baxter Travenol to Boost U.S. Sales. *Wall Street Journal.*

HERGERT, M.; MORRIS, D. (1988). Trends in International Collaborative Agreements. In F. Contractor and P. Lorange (eds.), *Cooperative Strategies in International Business.* Lexington, Mass: Lexington Books.

HUBER, G. (1991). Organizational Learning: The Contributing Processes and the Literatures. *Organization Science*, 2(1), 88-115.

KOGUT, B. (1988). A Study of the Life-Cycle of Joint Ventures. In F. Contractor and P. Lorange (eds.), *Cooperative Strategies in International Business*: 169-203. Lexington, Mass: Lexington Books.

KOH, J,; VENKATRAMAN, N. (1991). Joint Venture Formation and Stock Market Reactions: An Assessment in the Information Technology Sector. *Academy of Management Journal,* 34, 869-892.

LAMPEL, J.; SHAMSIE, J. (1994). Cooperative Response to Competitive Uncertainty: Are Industry Leaders Different from Followers? Paper presented at the Academy of Management Annual Meeting, Dallas, TX.

LANT, T., MILLIKEN, F.; BATRA. B. (1992). The Role of Managerial Learning and Interpretation in Strategic Persistence and Reorientation: An Empirical Exploration. *Strategic Management Journal*, 13, 585- 608.

MINTZBERG, H. (1979). Patterns in Strategy Formation. *Management Science*, 24 (9), 934-959.

MINTZBERG, H. (1990). The Design School: Reconsidering the Basic Premises of Strategic Management. *Strategic Management Journal,* 11, 171-195.

MINTZBERG, H., RAÌSINGNANÌ, D.; THÉORÊT, A. (1976). The Structure of "Unstructured" Decision Processes. *Administrative Science Quarterly,* 21, 246-275.

NOHRIA, N.; GARCIA-PONT, C. (1991). Global Strategic Linkages and Industry Structure. *Strategic Management Journal*, 12 (Summer), 105-124.

NONAKA, Ikujiro. (1994). A Dynamic Series of Organization Knowledge Creation, *Organisation Science*, 5, 14-37

OSBORN, R.; BAUGHN, C. (1990). Forms of Interorganizational Governance for Multinational Alliances. *Academy of Management Journal*, 33, 503-519.

PETTIGREW, A. (1990). Longitudinal Field Research on Change: Theory and Practice. *Organization Science,* 1, 267-292.G3

PFEFFER, J.; SALANCIK, G. (1978). *The External Control of Organizations: A Resource Dependence Perspective.* New York: Harper & Row.

Pharma—in Transition to an Uncertain Future. (1991). *European Chemical News*, February 11, 42-44.

PORTER, M. (1980). *Competitive Strategy.* New York: Free Press.

PORTER, M. (1990). *The Competitive Advantage of Nations.* New York: Free Press.

PRAHALAD, C.; HAMEL, G. (1990). The Core Competency of the Corporation. *Harvard Business Review,* May-June, 79-91.

QUINN, J. (1980). *Strategies for Change: Logical Incrementalism.* Homewood, Ill.: Irwin.

QUINN, J. (1993). *Intelligent Enterprise.* New York: Free Press.

RING, P.; VAN DE VEN, A. (1992.) Structuring Cooperative Relationships Between Organizations. *Strategic Management Journal*, 13, 483-498.

ROLFE, R., RICKS, D., POINTER, M.; MCCARTHY, M. (1993). Determinants of FDI Incentive Preferences of MNEs. *Journal of International Business Studies*, 24, 335-355.

SENGE, P. (1990). *The Fifth Discipline: The Art and Practice of the Learning Organization.* New York: Doubleday/Currency.

SHAN, W. (1990). An Empirical Analysis of Organizational Strategies by Entrepreneurial High-Technology Firms. *Strategic Management Journal*, 11, 129-140.

SMITH, L. (1985). Merck has an Ache in Japan, *Fortune*, March 18, 42-48.

SNEADER, W. (1985). *Drug Discovery: The Evolution of Modern Medicines.* Chichester: Wiley Medical.

STOPFORD, J.; BADEN-FULLER, C. (1994). Creating Corporate Entrepreneurship. *Strategic Management Journal,* 15, 521-536.

STOPFORD, J.; WELLS, L. (1972). *Managing the Multinational Enterprise: Organization of the Firm and Ownership of the Subsidiaries.* New York: Basic Books.

TALLMAN, S.; SHENKAR, O. (1994). A Managerial Decision Model of International Cooperative Venture Formation. *Journal of International Business Studies*, 25, 91-113.

TEITELMAN, R. (1989). Pharmaceuticals, *Financial World,* May 30, 54-80.

THOMPSON, J. (1967). *Organizations in Action.* New York: McGraw-Hill.

WILLIAMS, M. (1984). Early Reports from the War on Painkillers. *Fortune,* August 20, 101.

YIN, R. (1984). *Case Study Research: Design and Methods.* Beverly Hills: Sage Publications.